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A VALUE CHAIN AND CLUSTER PERSPECTIVE ON THE COMPETITIVENESS OF EUROPEAN FRESH VEGETABLE PRODUCTION – CASE STUDIES FROM GERMANY, ITALY AND SPAIN

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A VALUE CHAIN AND CLUSTER PERSPECTIVE ON COMPETITIVENESS OF EUROPEAN FRESH VEGETABLE PRODUCTION CASE STUDIES FROM GERMANY, ITALY AND SPAIN

Bettina RIEDEL

Abstract

In the present study we combine cluster theory with a value chain approach, with the aim of discovering elements of the European fresh vegetable business that could enable local producers to gain competitive advantages in a global market.

European producers of fresh vegetables are under pressure to improve their performance and increase their competitiveness. Competitive advantage can be gained through innovation and by using unique resources stemming from cooperation between producers and complementary actors in local clusters. However, locally clustered producers do not sell to open markets but need access to value chains governed by lead firms, the large European retail chains, which set the rules and conditions of participation.

The study presents first results from a multiple case-study analysis involving three different European regions in Germany, Italy and Spain specialized in fresh vegetable production. In-depth interviews with practitioners allowed us to confirm some main trends in business organization in the European fresh vegetable industry, but also to point out some interesting peculiarities of this industry. Local fresh vegetable producers become competitive due to their integration both in local production and wider marketing networks, where unique knowledge is created and interchanged by personal relationships. Further concentration on the local level is claimed to countervail power imbalances that usually favor buyers. The need for leading supermarket chains to build up direct relationships with key suppliers disturbs the functioning of existing relationship patterns in the local cluster. Creation of exclusive relationships with retail chains is pursued by entrepreneurs of innovative producing farms who treat their special knowledge and capacities as competitive advantages in the sharp competition in world markets and do not share it with other cluster actors.

1. Introduction

The paper reports first results from a multiple-case study conducted in Germany, Italy and Spain with the purpose to explore structure and mechanisms of value chain and cluster organisation in the European fresh vegetable business and its impact on competitiveness of local fresh vegetable producers. European producers of fresh vegetables are under pressure to improve their performance and increase their competitiveness in the highly competitive fresh-market sector. Fierce competition, strict quality and service requirements, technological changes and elevate concentration levels make collaboration of business participants an essential and necessary prerequisite to meet market demands and to be competitive.

The European fresh vegetable business reveals the picture of locally concentrated phenomena, with regionally defined specialization in products and often a long tradition in their cultivation. Aside the natural features, place-bound socio-cultural, political and historic factors are assumed to be responsible for the ability of horticulture business participants to adapt to, to cope with and to anticipate the demands of the market. That leads to argumentation in economic geography and regional science literature, where determining factors of competitiveness in the globalizing world are increasingly seen to be situated at the regional level, making the spatial organisation of production an important parameter for knowledge transfer, development and diffusion of innovations and trustful cooperation (Krugman 1991; Audretsch and Feldman 1996; Porter 1990, 1998; Pyke and Sengenberger 1992; Storper 1995; Maskell and Malmberg 1999).

However, locally clustered producers do not sell to open markets. Large European retail chains are the decisive actors that decide about access of producers to the international fresh vegetable market, by setting rules and conditions for participation. Ideas from scholars of global value chain analysis sustain that the most dynamic trends characterising the fresh vegetable industry are increasing vertical coordination among globally dispersed firms and advancing concentration at all stages of agribusiness value chains. A direct consequence of these tendencies is the creation of inequalities in market power, benefiting leading firms with the highest amount of concrete resources (knowledge, control over information, market power, and veto potentials) at the expense of others in the value chain and in the local production area (Gereffi and Korzeniewicz 1994; Gereffi 1999; Dolan, Humphrey and Harris-Pascal 1999; Dolan and Humphrey 2004; Humphrey and Memedovic 2006; Bair 2008; Sturgeon 2008).

A decisive problem for the efficiency of the local fresh vegetable production and marketing system is that retailers transformed themselves from resellers of products to actors that play a critical role in product development, branding, supplier selection and distribution (Humphrey 2006, Dobson 2003). That raises the question of how independent the local actors can be to actively create valuable and innovative regional production and marketing systems for being competitive in the market and for gaining bargaining power towards the powerful distribution side.

Because both value chain and cluster specific issues may play a key role for fresh vegetables business organisation, an explorative research approach has been chosen to uncover the relevant variables regarding the coordination of inter-firm relationships and their importance for the competitiveness of the European horticultural businesses on the global and the local level. In-depth interviews with central figure of the respective regional fresh vegetable sector were the primary method of data collection.

A value-chain approach was chosen to be the main analytical tool due to its effectiveness in explaining the distribution of tasks, risks, responsibilities and margins along the market chain (Humphrey 2006, Hendrikse 2003). The analysis is complemented by a cluster-approach technique to determine interdependent relationships between regional cooperation forces and the development of regional economies (Porter 1990, 1998).

To the author's knowledge, few attempts have been made to apply the global value chain approach to analyze fresh vegetable value chains in Europe and even more so to combine it with aspects from cluster research. Therefore we attempt to merge the information we can get from the two frameworks in order to provide a more comprehensive picture of relationship organization and underlying mechanisms of European fresh vegetable business.

2. Competitiveness in global value chain and cluster theory

Firms are under pressure to improve their performance and increase their competitiveness. New low-cost producers are entering global markets intensifying competition in markets for labour-intensive manufactures like fresh vegetables. The literature on competitiveness suggests that the most viable response for producers to maintain or increase incomes in the face of increasing pressure is to 'upgrade' – to make better products, make them more efficiently, or move into more skilled activities (Porter 1990, Humphrey and Schmitz 2002, Maskell and Malmberg 1999).

Scholars from various academic disciplines sustain the rise of value chains and regional clusters as key organizing principles that enable firms for being competitive. The recent literature on clusters is optimistic about the possibility of fostering competitiveness through local cooperation and governance activities (Cooke 2003). Value chain literature, in contrast, emphasizes that globalized lead firms coordinate the value chains in which clusters operate. Cluster firms are seen to be increasingly incorporated in national and global value chains rather than having only regional relations (Humphrey and Schmitz, 2002). Governance – as the explicit coordination of economic activities through non-market relationships – is particularly important for the generation, transfer and diffusion of knowledge leading to innovation, which enables firms to improve their performance (Humphrey and Schmitz, 2008). The two approaches see governance operating at quite distinct levels which is illustrated in Table 1.

Table 1. Governance, relations and key challenges in cluster and value chain theory

	Clusters	**Value Chains**
Governance within the locality	Strong local governance characterised by close inter-firm co-operation of similar and complementary firms and active private and public institutions. Risks attenuated by local mechanisms for risk-sharing.	Not discussed. Local inter-firm co-operation and government policy largely ignored.
Relations with the external world	External relations not theorised, or assumed to be based on arm's length market transactions.	Strong governance within the vertically organized chain. International trade is increasingly managed through inter-firm networks. Risks attenuated by relationships within the chain.
Key competitive challenge	Promoting collective efficiency through interactions within the cluster.	Gaining access to chains and developing/keeping linkages with major customers.

(Humphrey and Schmitz 2000, p. 14)

By combining the two approaches advancement can be made to overcome the most criticized shortcomings of both approaches: (1) Cluster analysis doesn't theorize the links of regional cooperation system to the external world. This is a great deficit because decisions made in the cluster-external surrounding have a clear impact on how coordination is carried out locally. (2) Value chain theory instead tends to overlook that not only decision made in the chain are responsible for coordination structure. In this sense also the local level counts because an important part of the chain, especially the producers, are integrated in a locally bound network and are influenced in their decisions by the integration in exchange relationships in the local network.

2.1. Cluster - the local determinants of competitiveness

Since the early 1980s there has been a well-documented resurgence of interest in the region as a site of economic interaction and innovation. Several schools of thought have

emphasized the local determinants of competitiveness including the new economic geography, business studies, regional science and innovation studies (Bunnell and Coe, 2001). This literature is optimistic about the possibility of strengthening competitiveness through local or regional governance, and argues that in a globalizing economy the only permanent basis for competitive advantage will be localized and based on tacit knowledge (Makell and Malmberg 1999, Bathelt, Malmberg and Maskell 2004, Malmberg 1997).[1]

A regional cluster is defined as a geographically bounded concentration of interdependent and complementary firms, which are connected to each other by using the same technology and knowledge base as well as the same raw materials. Since economic activities tend to agglomerate at certain places clusters are specialized in the production of certain products. To be not just an agglomeration of firms but a valuable local production system clusters have to feature vertical as well as horizontal co-operation between the participating firms, i.e. there are active channels of business transactions and communication between the cluster participants (Bathelt 2003).

The common fundamental principle of all of the named cluster approaches is their emphasis on intraregional interactions and relationships between firms and their institutional environment. The concepts try to capture the essence of localized clusters of activity characterized by high-intensity interactions involving tangible (economic, social and political institutions) and intangible (knowledge, know-how, and conventions), elements. According to this argument, the growing demands placed by the world economy can be dealt with the best by focusing local potentials. The main potential advantages of spatial clustering that have been identified in these research literatures are shared costs for infrastructure, the buildup of a skilled labour force, transaction efficiency, and knowledge spill-overs leading to firm learning and innovation. With a chronological view of research on clusters we can observe a general shift away from the concern about input-output relations and material linkages towards a broader examination of the social and institutional foundations of growth which is manifested in the prominence of concepts on 'learning regions' and 'innovative milieu' (MacKinnon, Cumbers and Chapman 2002; Amin and Thrift 1994; Camagni 1991; Cooke and Morgan 1998; Morgan 1997; Piore and Sable 1984; Storper 1997).

Critics on cluster concepts centre on the fact that the work of different schools of thought created a confusing variety of agglomeration concepts without resulting in a unified theoretical framework for analyzing spatial clustering. Another problem with the approaches on regions is their implicit claim to see regions as distinct objects with causal powers of their own. The approaches tend to ignore problems concerning intraregional divisions and tensions and presuppose the capacity of local actors to intraregional cooperation. Important for this study is the critic that much of the work on regional economic development remains isolated from broader analysis of external relationships and events. This is a problem as adaptation to changing external circumstances is a key issue of innovative regional systems (MacKinnon 2002; Martin and Sunley 2001). The method used in this study to combine the analysis of a local cluster with the value chain approach which has its focus on inter-firm relationships with an extra-regional, sometimes global reach, helps to make first advancements in the direction of these critics.

2.2. Global value chain research on determinants of competitiveness

Global value chain (GVC) analysis has emerged since the early 1990s as a novel methodological tool to analyze trends in global manufacturing, and in particular the increasing role of retailers and brand-name companies in creating global production, distribution and marketing networks (Ponte 2008, Sturgeon et al. 2008). The global value chain perspective attempts to provide an explanatory framework for the development of vertical coordination between firms. A value chain can be defined as a socioeconomic system which consists of a set of interdependent firms performing a sequence of value adding activities required to bring a product from conception to consumption (Bair 2008). The tacit coordination of markets is being replaced increasingly by 'explicit coordination', i.e. coordination through direct exchanges of

[1] Knowledge embedded in production practices and the know-how of firms and workers

information between firms. This coordination is usually referred to as value chain governance (Humphrey and Memedovic 2006). Networks of inter-firm relationships were described first as commodity chains, later as global commodity chains, and most recently as global value chains.

The book "Commodity Chains and Global Capitalism", published in 1994 by Gary Gereffi and Miguel Korzeniewicz, can be seen as the beginning of Global Commodity Chain (GCC) analysis as a relatively coherent paradigm. The analytical emphasis of GCCs is on the activities of firms, and especially the chain drivers that play the lead role in constructing and managing international production networks. Gereffi's framework lays out four key structures that shape GCCs: input-output, geographic, governance, and institutional. The governance function within Gereffi's GCC framework captured variation in the way that firms organized their cross-border production arrangements. He made a key distinction between global chains that are driven by two kinds of lead firms: buyer-driven and producer-driven chains (Gereffi 1999). The governance concept in Gereffi's framework as well as the buyer-driven chains attracted by far the most attention by research. The most recent approach of GVC analysis has its origins in an interdisciplinary initiative of researchers in 2000, who examined different approaches to the study of value chains and global production networks. GVC analysis draws inspiration from its GCC predecessor but also from the distinct tradition of transaction cost economics with the aim to create a coherent unique approach to study global value chains (Bair 2008, Sturgeon 2008, Gereffi 1994, Sturgeon et al. 2008).

The main theoretical concepts in the GVC approach are:

1. *Governance*: In GVC analysis, governance is conceptualized as the coordination of inter-firm relationships through direct exchanges of information between firms by the definition and enforcement of instructions relating to what products are to be produced (product design), how they are to be produced (process controls) and when (timing). Apart the question what different forms governance can take, there are two further aspects of governance to be addressed: the reasons for governance and how governance is enforced (Humphrey and Memedovic 2006; Gereffi, Humphrey and Sturgeon 2005, Hendrikse 2003).
2. *Power*: Governance in value chains is associated with coordination power (the ability to provide and enforce instructions) and differences in market power. Identification of powerful actors in the chain, and an examination of the sources of this power and the ways it is used, remains a central project of GVC theory-building. Lead firms in value chains are able to make key decisions about inclusion and exclusion of particular suppliers, the distribution of particular activities between different actors in the chain and the structure of production. The consequences of asymmetries of market power in value chains are that profits, and hence resources for innovation and growth gravitate to points of concentration on the value chain and that different actors in the chains are exposed to differing degrees to risk (Milberg 2003, Hingley 2005, Pietrobelli and Saliola 2008).
3. *Institutions*: the role that institutions play in structuring business relationships and industrial location. Institutions can be defined as the rules that govern society. As institutions we understand bureaucratically rules, codified in legal cannons and regulatory systems, as well as societal norms and expectations (North, 1990). Consideration of institutions in the context of GVCs is important because routines of interaction between suppliers and lead firms can be deeply rooted in domestic or local institutions and culture and they structure (enable and limit) firm-level GVC governance in an ongoing manner. Firms and industries clearly adapt in response to institutional pressures.

2.3. Value chain approach applied to agribusiness

We can recognize two important trends in the development of global agricultural markets that are associated with value chain approach: concentration at all points in the value chain and an increasing scope and complexity of food standards.

- **Concentration** in value chains is an important aspect because it changes the organization of value-chain relationships. The important effects related to concentration in value chains are: (1) concentration at one point in the value chain drives concentration at other points in the value chain further; (2) concentration at one point in the value chain creates oligopolies and for this reason, inequalities in market power. This means that the market power of some enterprises in the value chain will increase to the expense of other firms. Especially important for fresh vegetable value chains is the concentration at the point of sale to consumers and the successive concentration in production which is supposed to influence the organization of inter-firm relationships in the local production system (Humphrey and Memedovic 2006).
- **Standards** matter for two main reasons when we analyze global value chains: (1) they have an impact on the extent and codification of information required to sustain transactions and (2) they have an impact on supplier competences. New standards requirements frequently change the level of competence required from suppliers. The possible solutions are that suppliers adapt to the new requirements or that buyers switch to suppliers that can meet the challenges (Humphrey and Memedovic 2006). The important question here is not only how changing standards alter relationships between suppliers and buyers in value chains but also whether for producers being situated in a cluster context could have some positive effect on the adaptation capacity of the whole cluster or the single producer to new value chain requirements (Nadvi and Wältring, 2002).

3. Methodology

The purpose of this multi-case study was:

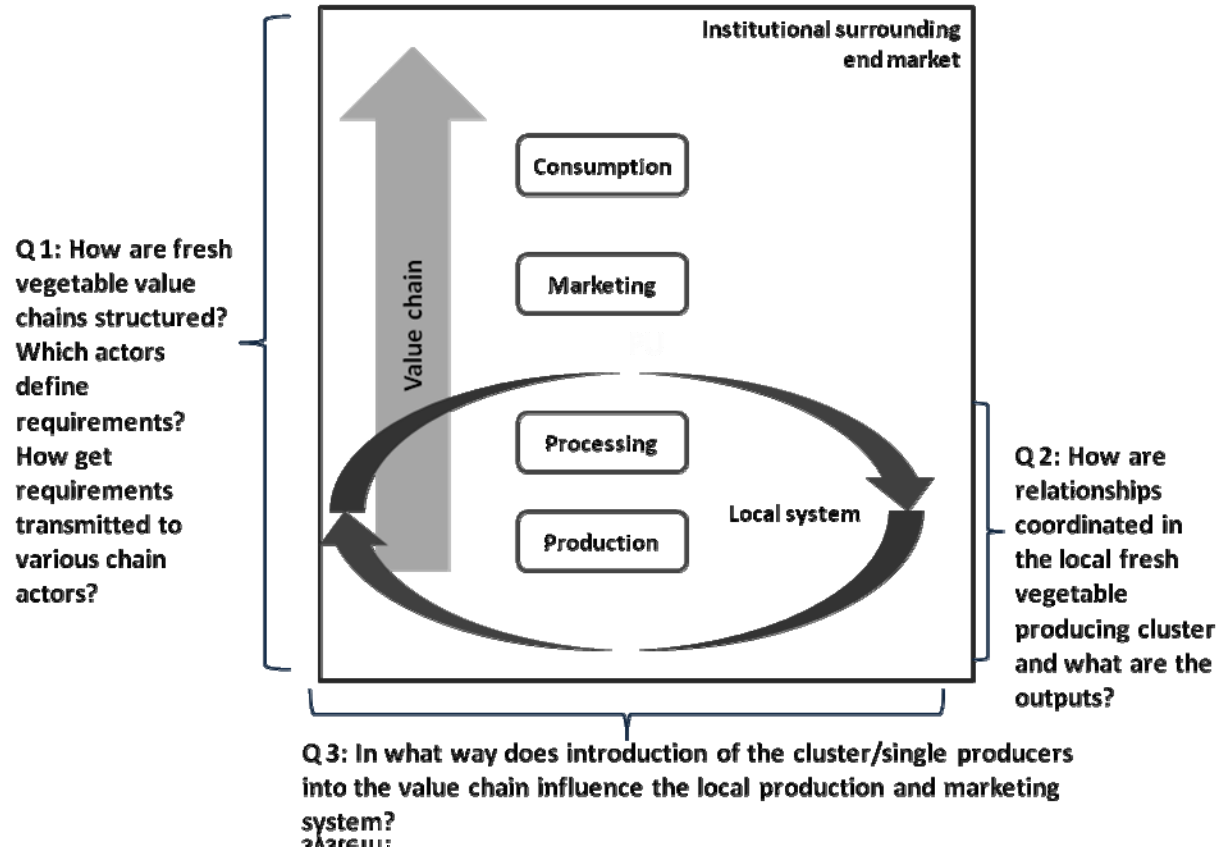
1. identifying factors of sector coordination explaining differences in the competitiveness of regions;
2. to discuss the possibility for local strategies to guarantee access and continuous participation of local producers in global markets.

As was said before, competitiveness is not just depending on the productivity of the single firm, but on the integration of fresh vegetable producing firms in local production contexts and on the inter-firm relationship coordination in value chains.

Figure 1 illustrates the conceptual framework based on the theoretical background introduced in the previous chapter and allocates the research questions to the two *loci* of interest: local network and extra-local value chain.

According to the purpose and the research questions of the study a qualitative methodology was held to be appropriate because it implies an emphasis on discovery and description. As was mentioned before, the focus of the research lies on discovering variables for fostering local strategies of securing competitiveness. Application of value chain research to analyse European fresh vegetable competitiveness and the combination of ideas from value chain and cluster studies to study this problem is relatively new. In this spirit, an explorative approach allows for searching in-depth and detail relevant categories from the local cluster level and the vertical value chain level and to advance our understanding of interdependencies in the fresh vegetable system. The application of three case studies allowed for discovering a greater variability of coordination mechanisms and decisive variables in three different socio-cultural contexts. The concentration on three field studies allowed studying them on location in depth due to intense communication and experience with central business actors over a longer period of time.

Figure 1. Conceptual framework and research questions



3.1. The cases – three European regions of important fresh vegetable production

This multicase study focused on three important European fresh vegetables producing regions: Palatinate in Germany, Emilia-Romagna in Italy and Murcia in Spain. These regions were chosen due to their economic value of the fresh vegetable business and for perceived differences in business organization and institutional environments.

3.1.1. Palatinate, Germany

The Palatinate is one of the most important German regions for fresh vegetable business, with intensive, highly concentrated fresh vegetable production and a long tradition in the cultivation of specialized fresh vegetables. 560 enterprises produce on 17.659 hectares 496.000 tons of fresh vegetables (Statistisches Landesamt RLP, 2008). This region is of special interest because as prior research indicates it's presumed that it shows some evidence of clustering. Furthermore, lately the fresh vegetable business of Palatinate is characterized by extreme structural changes in the organisation of its business, especially regarding increasing size of producing farms and the organisation of commercialization of the products. The German region was the first case study to be analysed in Spring-Summer 2007 by 19 expert-interviews. [2]

3.1.2. Emilia-Romagna, Italy

Emilia-Romagna is an important region for fresh vegetable production in northern Italy with 46.537 hectares of fresh vegetable production, 5.742 producers and a production of 639.496 tons of fresh vegetables (ISTAT, 2008). The interesting aspect of this region is the high

[2] Interview partners in Palatinate: 3 plant manager, fresh vegetable producing farms; 1 crop coordinator, seed breeding firm; 2 chief executive officers, intermediary traders; 2 members of the regional ministry of agriculture; 2 plant manager, seedling production; 2 executives of cooperatives; 1 director of association for water management; 2 members of the German association for horticulture business; 1 management and 1 consultant of the regional public research and education institute; 2 executives of private consultancy.

concentration and importance of modern distribution and logistics facilities for the commercialization of fresh fruits and vegetables. Emilia-Romagna has been the second case study that has been analysed mainly in winter 2007-2008 by the conduction of 16 interviews. [3]

3.1.3. Murcia, Spain

Murcia as the last of the three analysed regions (autumn 2009, 12 interviews) is the second most important Spanish region for fresh vegetable production, so that 26% of Spanish fresh vegetable exports originate from this region. The fresh vegetable sector of Murcia produces 1.571.037 tons of fresh vegetables on 42.165 hectares distributed over 2.986 farms. For our study of special interest is the fact that 90% of Murcia's fresh vegetable production is designated for export, which let's assume a modern organization of business probably affected by interesting changes in organization of business relationships between the single actors of the regional production and marketing system. [4]

3.2. Data collection methods

Data were collected via problem-based interviews with participants from various tiers of the marketing channel in the regions of Palatinate/Germany, Emilia-Romagna/Italy. So the interviews where guided by an interview guideline, questions were kept deliberately broad to allow interviewees as much freedom in their answers as possible. The researcher used the study's research questions as the framework to develop the interview guideline.

Aim of the in-depth interviewing of actors from different tiers of the chain and the regional horticulture economy was to unveil the decisive factors that define the market performance of the studied regions. Interviewing these complementary participants allowed capturing a very complex picture of the horticulture business performance. Recurring topics emerged out of the conversations also without especially launching the discussion in the direction of the upcoming problems.

The interviews were taped to increase the accuracy of data presentation, later transcribed and analyzed via qualitative content analysis. Interviews were selected as the primary method for data collection in this research. The interview method was felt to be of the most use in the study because it has the potential to elicit rich, thick descriptions. The major benefit of collecting data through individual, in-depth interviews was that they offered the potential to capture the person's perspective of the phenomenon under analysis. The intent was to understand the phenomenon of competitiveness on the local level and its changes by asking directly the involved people, to capture their ideas and views of the situation (Punch 2005, Gläser and Laudel 2004, Bogner 2002).

The choice of the single interviewed actors was determined by the importance of the enterprise they were working for the regional horticultural business and the position they had in the respective company. We tried to talk to persons in leading positions who are assumed to dispose of insight and overview of regional horticulture business. Aim of the sampling strategy was to cover as many different actors with complementary or possibly contradictory views of the regional fresh vegetable business as possible, which means it was tried to capture the perception of practitioners along the whole chain from seed producers to the retail level.

3.3. Data analysis

The challenge throughout data collection and analysis was to make sense of large amounts of data, and to identify significant pattern. The transcribed interviews produced many pages of data material in German, Italian and Spanish from the three studied cases. The first step was to summarize the interview texts to the main ideas that were held to be important during reading and re-reading of the text materials. Subsequently the material has been coded

[3] Interview partners in Emilia-Romagna: 3 chief executive officers and 2 technical staff of cooperatives; 2 executives of wholesale; 1 Crop specialist and 2 sales manager, seed breeding firm; 1 sales manager, seed breeding firm; 1 quality manager, retail; 1 private trader; 1 member of the regional ministry of agriculture; 1 executive technology firm; 1 producer.

[4] Interview partners in Murcia: 4 executives cooperatives; 3 executives export consortia; 1 chief executive officer and 1 director of regional research institute; 2 crop coordinator, 1 seed breeding firm.

to main categories which evolved from the interview material. Analysis followed methods proposed by Corbin and Strauss in grounded theory who propose a stepwise advancement of organizing data into categories and Miles and Huberman who use displays to understand complex data. Coding was guided by literature and the conceptual framework but kept open enough for allowing new, inconsiderate categories to evolve directly from the interview texts. The decisive categories that have been filtered will be used to compare and assemble a complex-variable causal model that should offer insight into structure and underlying causes of value chain structure in European fresh vegetable business and the interdependence of vertical inter-firm relationship coordination with the locally bound producing cluster (Punch 2004; Corbin and Strauss 2008; Miles and Huberman 1994).

4. Results

In the following section, some interim results on the single case studies will be presented. Aim is to create a complex model to understand structure and relationships between different variables on both the value chain and the cluster level. In this study the problem of data analysis was to make sense of a large amount of written data material and to find a way to present results comprehensively to the audience. A strategy might be to use graphs to illustrate complex relationships and underlying variables for relationship regulation. Miles and Huberman propose the use of displays to make large amounts of written words clear. Displays offer the possibility to simultaneously consider a wide array of data in form of words which should allow for better understanding relationships between variables (Miles and Huberman 1994; Corbin and Straus 2008).

In the following subsections the single case studies will be described. By means of some examples in form of graphical displays of relationships we try to give some insights into cluster organisation, value chain structure and their interdependence. The analysis of data material is far from being completed, so that conclusion drawing and giving recommendations are preliminary and limited. The aim of the examples given in the result section is not a conclusive evaluation of the situation in the single case studies. Examples have been chosen because they were thought to be valid representatives to give first insights into what is meant by global value chain and cluster analysis of fresh vegetable business and to show to the reader how both approaches can help to understand the structure of relationships in the fresh vegetable sector we can observe in real life.

4.1. Palatinate, Germany

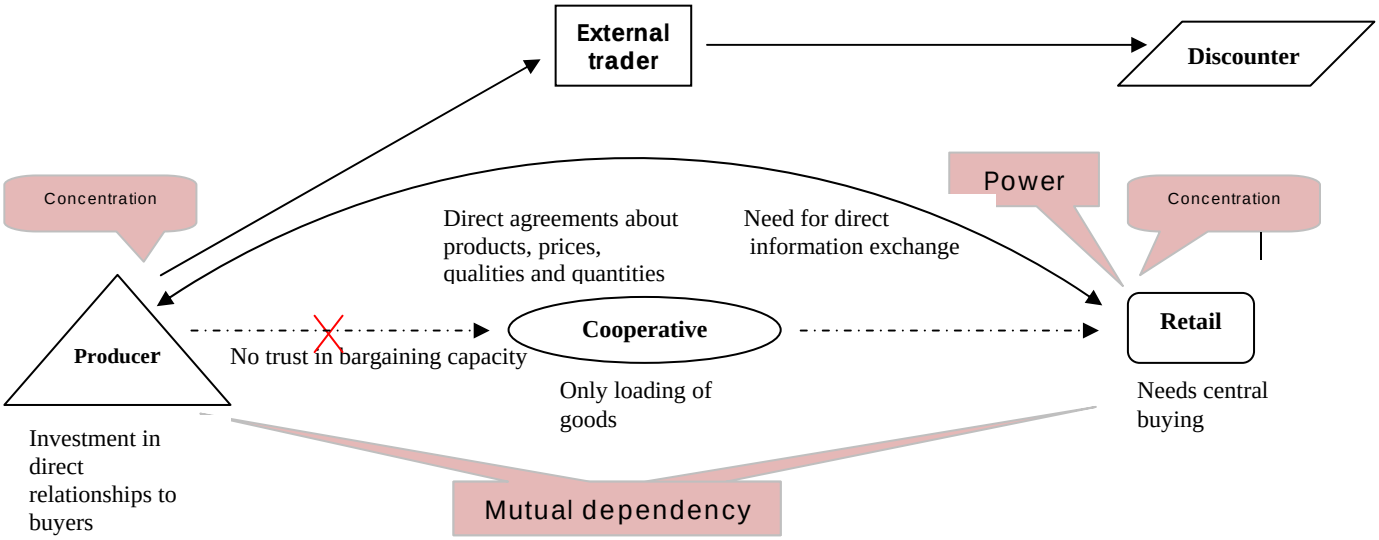
In the Palatinate the development of the fresh vegetable sector of the last years is characterized by increasing concentration in production and significant changes in the traditional purchase and sale relationships. These changes have an impact also on the nature of local relationship organization especially as regards cooperation in commercialization.

4.1.1. Example 1: Concentration in value chains, the development of novel producer-buyer relationships and the impact of scarce local cooperation capacity

The example of the emergence of new forms of relationship organization between producers and buyers and the functionality of local cooperation capacities between producers exemplify very well how elements in the chain and the local system influence each other.

Figure 2 illustrates the organization of purchase and sale relationships between producers, the cooperative and the retail in the Palatinate. In the Palatinate we can observe increasing direct personal relationships between producers and intense relationships between one important external trader, who is supplying one big German discounter and the local producers. The local cooperative gets more and more cut out of the business. So we need to draw on insights from value chain analysis on the impact of changing requirements on chain organization and the influence of concentration as well as explanations from cluster theory on local cooperation capacities. Furthermore we should try to understand how this two levels influence each other.

Figure 2. Palatinate's purchase and sale relationships for fresh vegetables in transformation



What happened in Palatinate's relationships between producers and buyers will be explained referring to the main theoretical concepts of value chain and cluster approach presented in the theory section of the paper.

Initial conditions

To understand the development of relations illustrated in the graph we first have to understand what happened on the retail level. The retail level is characterized by very high concentration (Humphrey and Memedovic, 2006). Due to that, retailers have a very powerful position which allows them to govern the chain by the enforcement of their wishes and demands. The main requirements big supermarket chains place onto the value chain are:

a. they need huge amounts of product, purchased from concentrated key suppliers to the time, price and conditions the retailers want;

b. they have very specific and rigorous quality and safety demands for the products.

For enforcing and communicating the specific requirements, retailers need to have close relationships with key suppliers. They need direct information exchange and direct agreements about products, prices, qualities and quantities. Direct relationships are only possible between supermarkets and large-scale producing enterprises, because one of the main requirements of nowadays supermarkets is to have less and less suppliers who supply high volumes. For producers that means they need to increase their business to create capacities to supply the retail on their own or they have to cooperate in cooperatives or other forms of marketing organizations. This brings us to the next important point to discuss in value chain relationships: concentration and its consequences.

Concentration and power

Two of the most important elements in value chain theory applied to agribusiness are concentration and power. High concentration of retailers leads to the creation of oligopolies and inequalities in market power. Concentration is important as we see also in this example because concentration on the retail level results in increasing concentration in upstream parts of the chain (Humphrey and Memedovic, 2006; Hingley, 2005). In the Palatinate we can observe increasing concentration of producers. Producers see enlargement of their firms as a strategy and necessity to gain bargaining power in the relationship to the buyer. Furthermore, concentration is simply necessary for being able to fulfill retailer's requirements. Concentration on the

producer level in the Palatinate cluster is additionally pushed on due to a not successfully working cooperative marketing. As we can see in the graph, in the last years we can observe an increasing development of direct relationships between producers and retailers. This development is driven and facilitated in the Palatinate due to the failure of cooperative marketing, the already reached size of producing firms and the long tradition of independent commercialization by farmers.

Power and dependencies

A very important aspect of value chain theory is the question of chain leadership and dependencies (Humphrey and Memedovic, 2006; Gereffi, 1994). Often it seems as if the retailers are completely independent due to their sheer market power. The big supermarket chains are the clear chain leaders and they are always in the more powerful position. But as illustrated in the graph, supermarkets, too, seem to become more and more dependent on their supplier. As producers are concentrating to create large-scale enterprises, and retailers own requirements become extremely specific, there won't be many producers left that can fulfill all these detailed requirements.

Palatinate's large-scale producers become very dependent on their buyers. They are increasing their business but the enterprises will probably never produce such a volume and turnover that they could supply various supermarket chains. Additionally, producers make very specific investments into the relationships to their buyers, like for example extreme specialization on few products or using only determined production methods, specifically required packaging material etc. which means that they cannot easily switch their buyers.

However, because of high concentration on both the producer and the retail level, we can observe a tendency towards mutual dependency. First, because of high concentration of producers also for retailers the range of possible suppliers is lower. Second, by setting new standards and stricter requirements the retailers themselves reduced the amount of producers that can comply with those new standards.

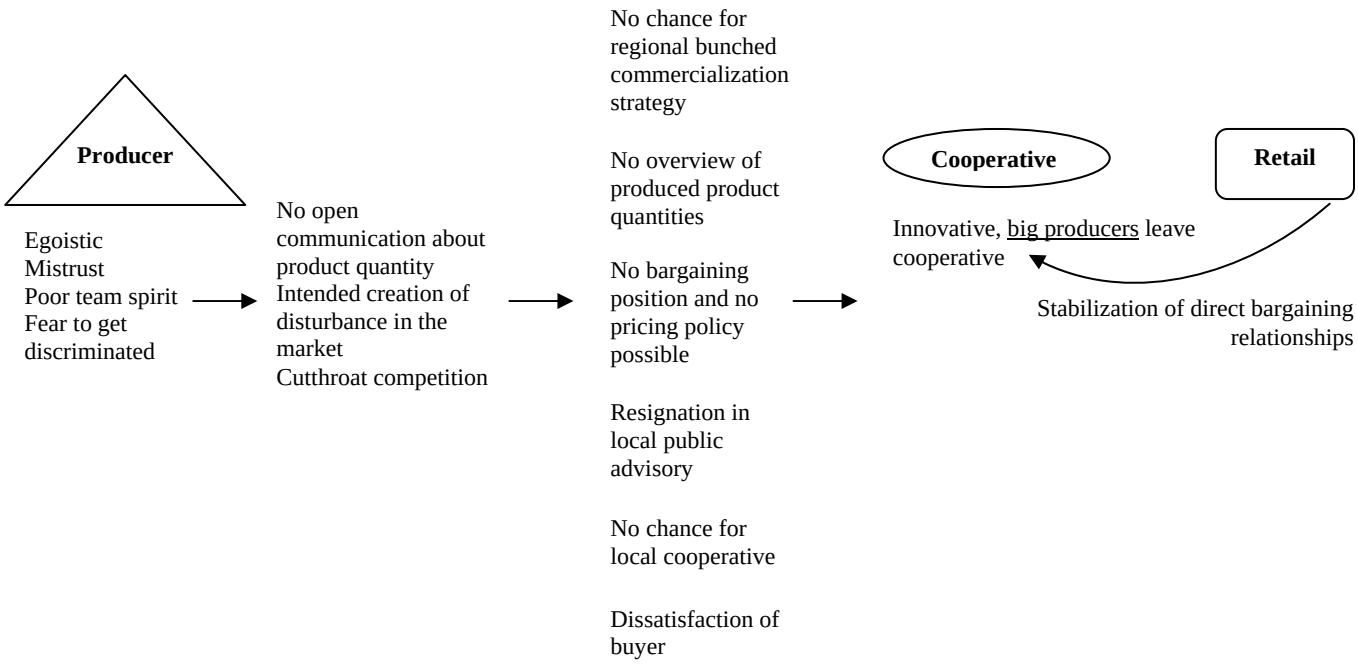
Dependencies we can also observe in the relationship between external trader, local producers and discounter. This external trader is one central element for commercialization of fresh vegetables for the Palatinate and he is supplying mainly one German discounter. The links in this trio-relationship are characterized by intense communication, they are long-term and close. According to producers, collaboration in this sub-chain is very good and the prices correct. But as a matter of fact in this case producers are completely dependent on one buyer. The cooperative gets more and more cut off the business: she functions only as a location for loading goods and for bookkeeping. Communication and agreements are made directly between external trader and producers.

Consequences for the local production cluster

Consequences for the cluster are mainly that decisive, large-scale producers, not trusting the bargaining capacities of the cooperative, increasingly leave their cooperative. This is becoming problematic because the local cooperative is losing at the same time important members and probably important buyers. This development is affecting especially small-scale producers who cannot commercialize their products on their own and need an efficiently working local commercialization institution.

Figure 3 illustrates more in detail how local producers in the Palatinate behave in commercialization and describes their characteristics and the impact this behavior has on the organization of commercialization in the region.

Figure 3. Behaviour of local producer and consequences for local cooperative marketing



Characterization of relationships between local producers

The relationship between producers in the Palatinate region is characterized by egoistic behaviour, poor team spirit and a high level of mistrust and fear to be discriminated concerning marketing possibilities, prices and information. Due to these characteristics, producers communicate neither among each other, nor to the commercialization responsible in the cooperative about their produced quantities, they create intentionally disturbance in the market and favour cutthroat competition. Consequence of this behaviour is that commercialization of fresh vegetables in the region as a whole as well as commercialization in the local cooperative is increasingly disturbed.

Consequences of bad communication in local relationships

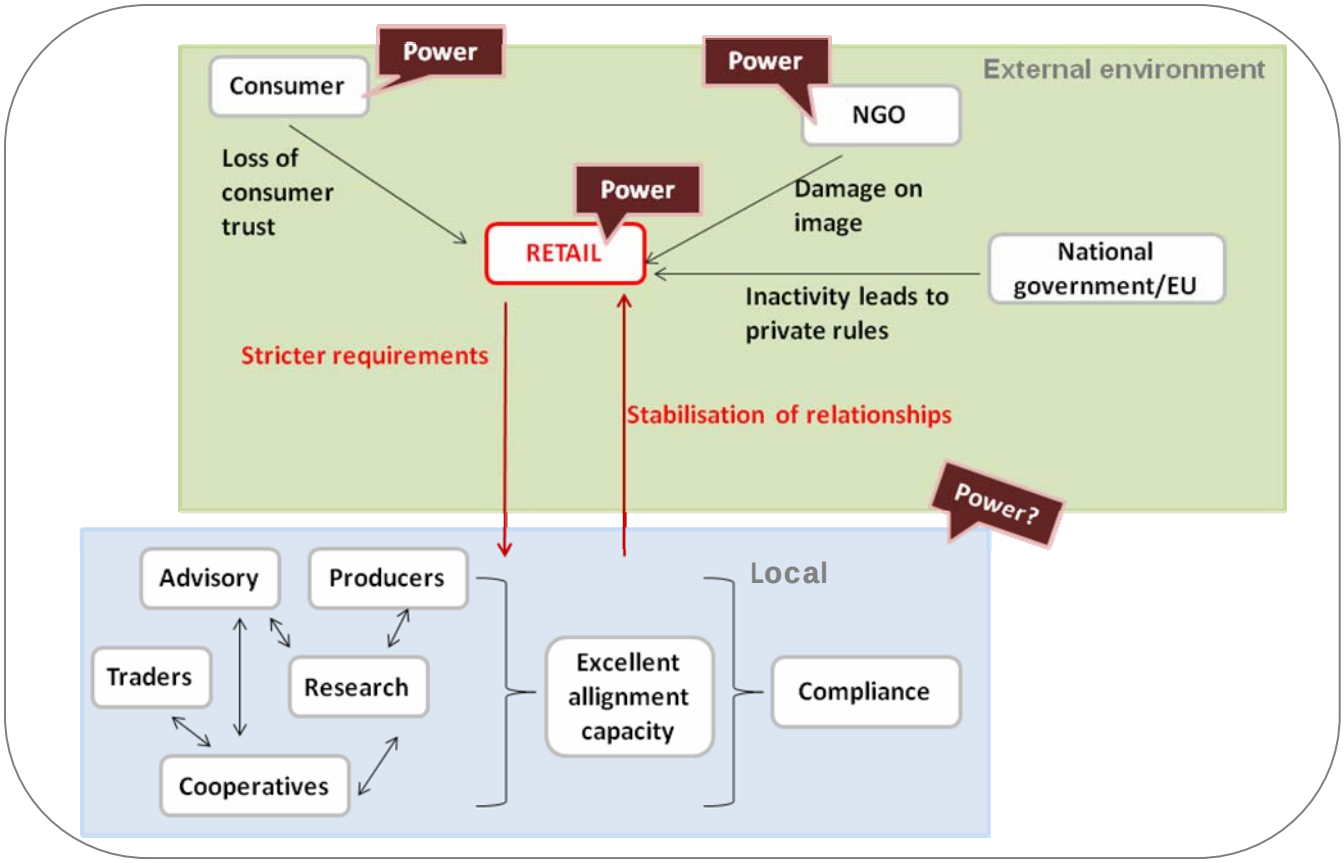
The consequence of this producer behaviour is that producers themselves destroy their own market and risk to lose trust and interest of their buyers. No actor in the region or in the external market has an overview over the produced quantities. Producers lose their already weak bargaining position, because they cannot be sure about the quantities they have to sell and they drift into a position where they hardly can influence the prices. The chance for a strategy to commercialize the whole product or most parts of it bunched under one name for the whole region is very bad. Not only buyers are dissatisfied by the commercialization style in the region and the local cooperative, but also the most important and biggest producers in the cooperative which favours their tendency to build up direct relationships to retailers and for leaving the cooperative.

4.1.2. Example 2: New standard requirements by leading firms and the adaptation of the local cluster – the example of stricter maximum residue levels of pesticides in fresh vegetables

A good example to demonstrate the interdependence of decision making on the various spatial levels on which business is organized is the issue of 'High pesticide residue levels in fresh vegetables' which occurred in the Palatinate in 2006/2007 and was named by all interviewees as one of the main decisive events in the last years that provoked significant changes in the structure of the local system and the relationship with business partners along the chain. The major difficulty is now to analyse how a decision made by one actor provokes changes in other parts of the relationship system. By analysing this, we can uncover the

mechanism behind enforcement and alignment of new standards and probably find out if there are clear leading decision makers in the chain or local system. Figure 4 depicts the main players and their interdependence.

Figure 4. Interdependence of players and players' decisions concerning the problem of pesticide residues in fresh vegetables



The figure shows the interdependence of the actors and the consequences that decisions of players in one point of a complex social system have on other players.

The decision made by NGOs to reveal the problem of pesticide residues in fresh vegetables sold by main German retailers to the media was the decisive event that forced other protagonists of the local fresh vegetable system and the chain to react.

Retailers had to react to this accuse. They reacted by imposing fiercer safety standards concerning fresh vegetable onto the producers. The power, that they have the ability to do so, underlines that the retailers are the chain leaders in fresh vegetable value chains. Nevertheless, we have to recognize that also chain leaders are vulnerable to circumstances occurring in the wider environment. What public players like the EU or the national government try to decide and implement since years – harmonisation of the national regulations of pesticide use to create an equal safety standard environment – could be enforced by retailers and was accepted by producers in just one year.

The reaction in the local production system in the Palatinate was immediate with the positive outcome of fulfilling the demanded. The compliance with the new demands made a change in business relationships between retailers and producers necessary. Relations had to become closer and long-term because of the increased necessity to exchange information and conduct monitoring. One consequence of the new standard environment will be a further structural change in the local system: larger producing enterprises are advantaged to fulfil new requirements because of the high costs of conducing residue samples, monitoring and certification procedures.

Governance, governance mechanisms and power in the example of new standard introduction by retailers

In this example we can observe the aspects of governance and governance mechanisms. Governance concerns the alignment of decision rights to certain players to define and enforce instructions which others have to follow.

In the presented case of pesticide residues in fresh vegetables and the consequence of the introduction of new standards and supervision systems the clear decision makers are retailers. They have the power to impose, from one day to another, new requirements onto the subordinated actors. Power is here the mechanism that is used to coordinate the introduction of new elements in the business relation. More precisely, the mechanism is the threat of exclusion from participating in the chain business by non-compliance. That doesn't mean that the chain leaders are fully independent and not exposed to risk. The relationships between the retailers and their suppliers are characterised by power asymmetries but the power isn't fully on the side of the retailers and they aren't completely independent in their decisions also if we can call them the chain leaders. They had to react and adapt to accusations of the NGOs. That matter of fact underlines how important it is to consider the context – the external environment – in which value chains are embedded because they are not free from influence of incidents that happen in the wider environment. Furthermore, it is also necessary to include the interdependence of the value chain with the local production and marketing system of fresh vegetables into the analysis. In the end, retailers were dependent on the capacity of the local producers to adapt to and to fulfil quickly the new requirements. Retailers imposed fierce requirements that easily couldn't have been achieved by local producers. Didn't they bring themselves in a difficult position because of the existing real threat to not be able to fulfil in time the requirements they said themselves? This was a clear use of power and implementing rules that have to be followed by other without discussing or negotiating them ex ante with the suppliers.

Adaptation capacity of innovative regional systems to external circumstances

Another aspect that could be discussed on the presented example is the question of the openness of regional systems to circumstances that occur in the external environment. Critiques on regional innovation systems argue that much work on regional economic development remains isolated from broader analysis of external relationships and events. This is a problem as adaptation to changing external circumstances is a key issue of innovative regional systems. Prospects for growth are thus strongly dependent on their capacity to adapt to changing conditions coming from outside the regional system (MacKinnon, Cumbers and Chapman, 2002, p. 300).

As we see in our example, the presented region reacted to the circumstances coming from outside. Obvious is that they had to react and adapt to if they didn't want to lose access to their market. The capacity of the players of the regional system – the producers in cooperation with research institutes, traders, regional government agencies – to adapt was high. They fulfilled the expectations of their buyers. Local cooperation relationships seem to be effective. Elements that are responsible for this effectiveness are the elevate knowledge level, the detailed data base and the experience of local actors due to long tradition in research and production. In the local production system we can constitute a high capability to create new concepts for production (plant protection in the production process) and the ability of the producers to quickly implement them. This is due to an effective information and knowledge exchange between the actors and their openness to consulting.

According to the cited literature, the regional system can be called innovative, because it fulfills the key issue of adaptation capacity to external circumstances. A factor limiting the relevance of this collective action is that it seems to take place only when there are no other chances left, but not as a kind of foresighted behaviour, not to mention a pro-active decision. The spirit of team play seems to be activated between producers when they are exposed to risk of non compliance caused by external incidents.

The outlined illustration of governance and interdependence in complex social systems on the example of the problem of pesticide residues in fresh vegetables in the German production region is just one small part of the collected and analysed data. However, it is a good example

to give a first impression of how governance mechanisms work and that conclusion about power asymmetries, decision makers or unilateral dependence cannot easily be made.

4.2. Emilia-Romagna, Italy

As in the case of the Palatinate, the results presented for Emilia-Romagna have to be considered as interim results that should give to the reader a first insight into the situation of relationships organization in this second case study. Even if analysis of data material is still in progress, first differences between the German, the Italian and the Spanish case can be perceived. However, it would be too early to provide conclusive comparative analysis at the actual state of analysis. Factors that could induce differences in chain organization are diverse basic regional conditions. The fresh vegetable sector of Emilia-Romagna is a more small-scaled business compared to the Palatinate situation. In Emilia-Romagna 5.700 enterprises produce on 24.800 hectares 640.000 tons of fresh vegetables; that means the average size are 4 hectares per enterprise, whereas in the Palatinate we have 31 hectares per producing firm. Also consumption and distribution of fresh vegetables are organized differently with traditional distribution formats being still more present in the Italian distribution system.

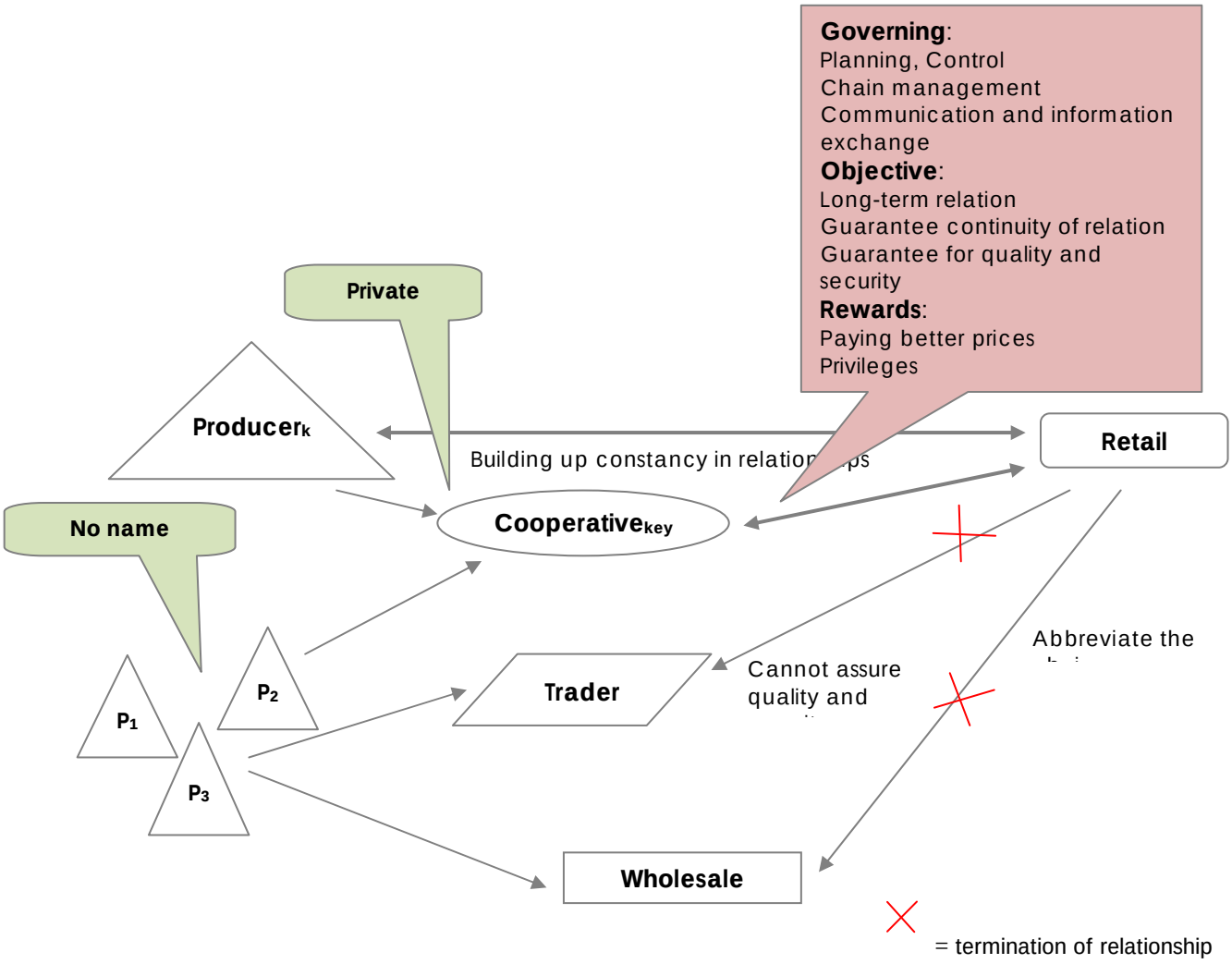
Due to paper length and advancement of data analysis for Emilia-Romagna only one small example will be made. But also this short introduction into this case study can give a first impression what the important issues are for main players of Italian fresh vegetable business. The presented example illustrates mechanisms of relationship coordination between producers, cooperatives and retail concerning private brands compared to other brands (producers brand for example). Interestingly, in none of the other case studies retailers or producers/cooperatives talked about the important difference in relationship organization concerning private brands as they explicitly did in the Italian case study.

4.2.1. Example 3: Differences in purchase and sale relationships between supplier and buyer concerning retails own brands or other brands (producers, cooperatives etc.)

In the relationship display in figure 5 the reader can see organization of modern distribution relationships between the big national supermarket chains and its suppliers. The interesting aspect of this example is the difference in purchase and sale relationships according to the fact whether the products are sold to consumers with retails own private brand or as products with the name of the producers or the cooperative.

As illustrated in a simplified way in Figure 5, also in the Emilia-Romagna case the development towards closer relationships to key suppliers appears to become more important for retailers, cutting of the market chain wholesalers and intermediary traders. Reasons for retailer's need to have stable relationships to key suppliers are that key suppliers can guarantee the security and quality of the products the retailer demands. Traders cannot guarantee quality and security of products because they buy from different and changing producers. Wholesale instead, isn't valid anymore as a platform for fresh vegetable sales to big supermarket chains in nowadays modern market. Retailers cannot go to the expense to go to wholesale markets and buy small amounts of products from many different suppliers. Furthermore, in the fresh vegetables value chain there are no margins left for intermediaries; the abbreviation of the chain becomes necessary.

Figure 5. Simplified Illustration of distribution relationships of fresh vegetables in Emilia-Romagna / Italy



Relationships between supplier and buyer concerning private retail brands

Relationships between retail and producer or cooperative are very much more coordinated by retail concerning private brand products. In this case, retail guarantees to the consumer specific items of the product with his name and cannot allow any failure. Otherwise damage to retailer's image will be the consequence and the retailer might lose his customers. Aim of the retail regarding private brand products is to control and plan the relationship with suppliers by chain management. A close and stable relationship becomes necessary to communicate specific demands to the producers and to exchange information. If supplier guarantees quality, quantity and service, retailer is also willing to pay better prices and other privileges.

Relationships between supplier and buyer concerning loose products or other brands

Coordination of relationships is less rigorous concerning no-name products or products with the brands of producers or cooperatives. Also in this case modern retail chains have strict requirements for suppliers, but communication with the suppliers is less intense.

Risk and dependencies

Talking about risk and dependencies in fresh vegetable value chains the conclusion seems to be that retail chains are the leading firms, making the important decision about what's going to happen in the value chain. As we can see in this example, the big supermarkets are governing the chain by their wishes, but it seems that the relationship between producers/cooperative and the supermarkets is developing more in the direction of a long-term partnership with the focus on communication and collaboration. We cannot really observe the development of an unbalanced relation where supermarkets merely exploit their power to command what upstream actors of the chain have to do. That informs the question of how risk and dependencies are distributed. The higher risk of losing markets and becoming too dependent lies always on the producer side, but in this case we can see that also supermarkets have to guard against risks of losing customers in the case of, for example, non-fulfillment of quality requirements concerning private brands.

4.3. Murcia, Spain

At this point of analysis, also for the Spanish case we will only present one, but a decisive example. On the example of relationships between cooperatives, export consortia and retailers main concepts of value chain analysis can be explained further: governance and its enforcement, the consequences of concentration and the questions of power and risk distribution.

4.3.1. Example: Organization of (export) purchase and sale relationships between cooperatives, export consortia and the retail chains

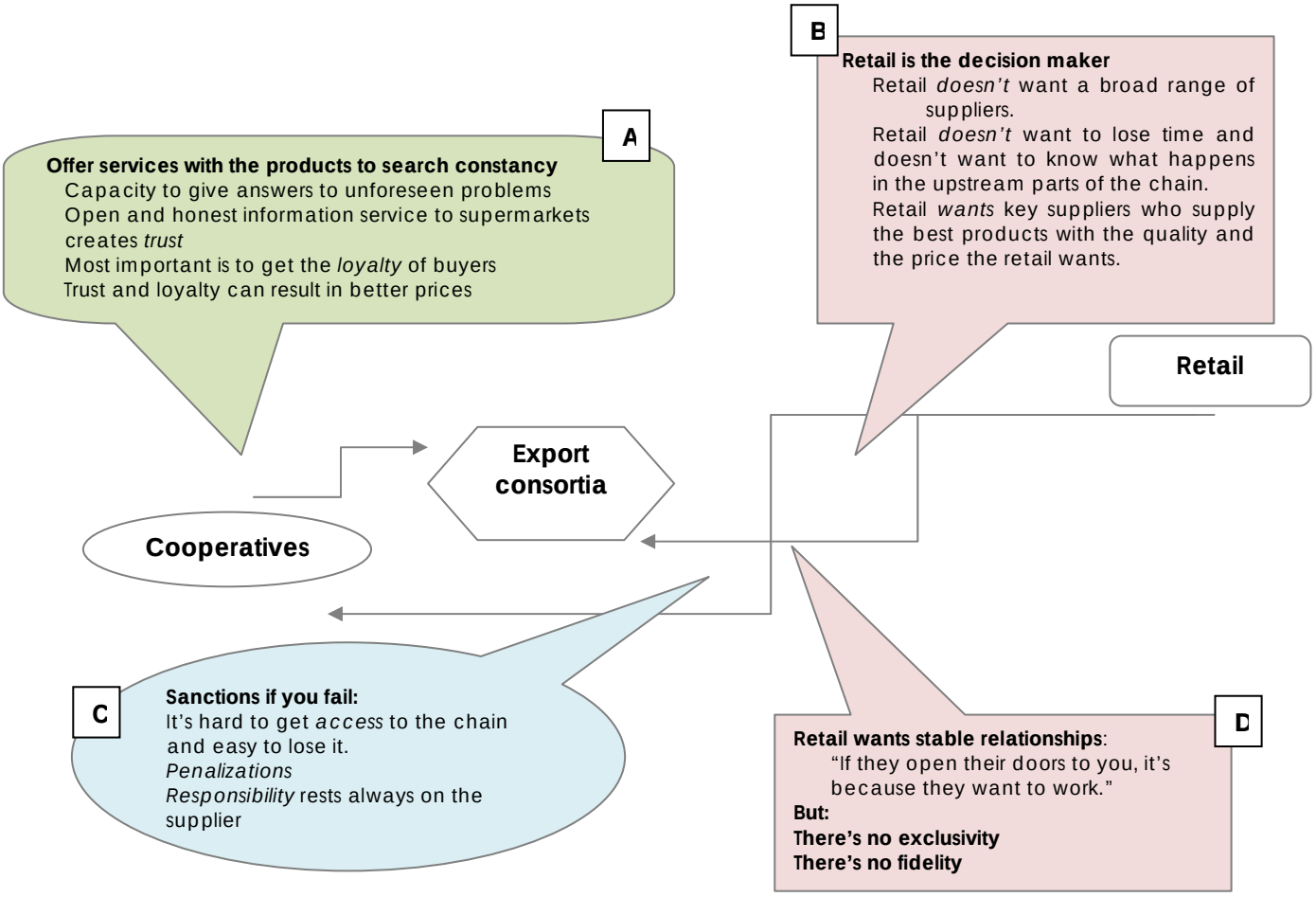
An important commercialization format of vegetable production in the Spanish region Murcia is the one of export consortia which had been founded in recent years to concentrate Murcia's offer of fresh vegetables. The aim to found export consortia was to improve the bargaining position of fresh vegetable suppliers and to develop the possibility of entering new markets. The boxes A to D in Figure 6 illustrate some decisive value chain concepts.

Concentration in global value chains

As we already heard in the Palatinate and Emilia-Romagna case study, the concept of concentration in value chains is one of the main elements that emerged during analysis. Also the data from the Spanish case study reveal that players of Murcian fresh vegetable business are mainly concerned with concentration processes and its consequences. The high concentration of retail drives also in Murcia increasing concentration processes on upstream parts of the chain further. Cooperatives try to merge and to found export consortia concentrating supply to upgrade their position towards the retailers.

The concept of concentration is related to the concept of power. Value chain relationships are characterized by power asymmetries allowing chain leaders for governing the chain by making decision about what other upstream actors in the chain have to do. As we see in box B retail chains impose their requirements on the chain, demand their fulfillment and penalize in case of non-compliance (box c). Retailers govern the chain by making the decision about what products have to be produced and under which conditions but they are not willing for real communication, nor do they really want to know what happens in upstream parts of the chain.

Figure 6. Mechanisms of relationship coordination in supplier-buyer relationships



Chain leaderships and positive and negative sanctions to enforce governance

Retailers are the clear chain leaders who set requirements for the chain and enforce them by positive and negative sanctions:

a. negative sanctions: If the suppliers fail in delivering all the required items for the products, retailer punishes the supplier by penalties or by denying further supply normally only of the product where compliance of demands wasn't achieved. In scarce occasions suppliers loose the whole campaign for all products;
b. positive sanctions: For suppliers it is important to deliver additional service (e.g. capacity to give answers to unforeseen problems; open and honest information service) trying to build up constant and faithful relationships to the buyers. Trust and loyalty of the buyer in the supplier can result in better prices (box A).

Governance in value chains is enforced by sanctions: deny of access to the chain is the negative form; achieving better prices is a reward by the chain leader (Humphrey and Memedovic 2006). As written in box A in the graph, producers try to diminish risk of losing access to the chain by offering extra service to their buyers. But as we can see in box C, the risk on the supplier side is always higher as getting into the market is very hard for producers, but losing chain access in case of non compliance of requirements is very easy.

Is it a balanced relationship?

As we notice in the graphic, retail's desires seem to be contradictory. Retail needs key suppliers because every supermarket chain wants to guarantee the best goods for its own

business. Nevertheless, relationship requirements seem to be somehow ambiguous. On the one hand retail wants to build up stable relationships to guarantee supply of the best products, and suppliers try to obtain trust and loyalty of their buyers by giving service (see box A and B). But data also shows that relationships won't be nor exclusive nor characterized by fidelity (see box D). The powerful position of retailers as chain leaders gives them the possibility to attain the positive outcomes from stable relationships. Being in the more powerful position, however, permits retailers to locate responsibility of compliance to upstream parts of the chain and to punish suppliers by denying further access to the chain if full compliance of requirements isn't achieved.

4.4. Summary of the interim results on the three regions

The Palatinate case study is the richest one regarding amount of available data and the advancement of analysis. Therefore the result section for the Palatinate is more elaborate compared to the other case studies. According to the author's opinion, both presented examples for the Palatinate are very indicated to advance the understanding of what is meant by applying global value chain analysis to understand the structure and underlying mechanisms of European fresh vegetable business. With the chosen examples on changing relationship organization between supermarkets and their suppliers and on the introduction of new standards into the chain we tried to explain some of the main concepts in value chain and cluster analysis.

Compared to the cases of Emilia-Romagna and Murcia, positive, but also negative, outcomes of relationship coordination in the local cluster seem to be more evident in the Palatinate case study. In the presented examples the reader could see positive and negative effects of local clustering. In the example of the introduction of new standards we could observe a positive and effective collaboration between all actors of the local system. The business of every single actor and the whole cluster was threatened, so collaborative forces were activated. Concerning the collaborative commercialization to gain competitive advantages we cannot observe such a positive outcome of local cooperation forces. In this case, actors are to egoistic and everyone tries to get the best results commercializing on their own. Cluster theory says that competition on the local level between the actors enhances the effort single actors undertake to improve their business and augments competitiveness for the whole local system (Porter 1990, 1998). In this case however, it seems that the local competition has negative effects on the competitiveness of the local cluster as a whole because the commercializing attitude of actors from producers to marketers in the cooperative destroys prices, disturbs the market and causes dissatisfaction of customers.

The first impression about relationships between producers and buyers in the Italian case seems to be that they are less hostile and negative. Producers and cooperatives in Italy must fulfill the same requirements if they supply the big international supermarket chains but they seem to be less preoccupied. Further considerations have to be made concerning the cluster relationships in Emilia-Romagna which seem to be less evident and important. The question and problem here is whether there is no cluster with special local relationships and local advantages for producers or if the methods for elevating cluster variables weren't appropriate. This consideration addresses the critics made on the operationalizability of the cluster approach. As literature states, the cluster research is well developed and seems very plausible on a theoretical level but shows shortcomings concerning its empirical application and so far no concrete survey methods have been developed (MacKinnon et al., 2002).

Also in the Murcian case, more value chain than cluster elements could be discovered during analysis. We can find also changes in local relationship organization due to constraints coming from the value chain – like the increasing need to concentrate the offer by merger of cooperatives or the creation of export consortia – but positive cluster effects are less evident compared to the Palatinate case study. The important level for relationship organization and information exchanges in the region seems to be the cooperative. In Murcia we can also observe vertical integration on the local level: for examples do cooperatives often integrate seedling producers to guarantee the best products to the best prices for their members' production. There is no trust by cooperatives in external seedling producers. In the Palatinate,

instead, relationships between producers and seedling producers are organized differently. There are some local decisive seedling producers who have intense exchange relationships with the local producers, but also with the local research institute or with crop coordinators from seed breeding firms. Also the Murcia case study has to be analysed further for value chain and cluster elements and for their interdependence.

Further steps for analysis of data material of all three case study is to create additional displays and multi-variable models of the evolved concepts that help to better understand the complex structures and mechanisms in value chains and clusters, with a special focus also on their interdependences.

5. Conclusions

The objective of this research was to analyse the structure of fresh vegetable value chains and local production clusters and to discover the underlying structuring mechanisms with the main goal to discuss the possibilities for local strategies to secure competitiveness of local producers in the global market.

The empirical results of the three case studies allowed us to identify and evaluate main drivers for determined value chain structure as presented in the examples for the single case studies. The research aim to discover a high variety of variables for chain and cluster structure could be reached due to the application of a multiple-case study with data collection in different cultural settings. Results from three different regional case studies in three countries permitted to discover a greater variety of variables and allows for comparison of similarities and differences of driving mechanisms for chain and cluster structure. There are conditions in the global market that define a relatively similar business environment for all the three regions, for instance do all local producers have to sell to nearly the same buyers according to the same requirements because of the high concentration of the biggest retail chains. Nevertheless, it is interesting to observe, that actors situated in different cultural environments react differently to the challenges of the market and that we can find differences in local relationship organization that might influence the competitiveness of the single local production systems.

Regarding contributions to theory development, the study tried to make advancements concerning the combination of ideas from global value chain analysis with concepts from cluster approaches to analyze European fresh vegetable business. On a theoretical level in the research project we tried to overcome the shortcomings of both approaches: value chain analysis doesn't account for local linkages and cluster theory instead is only concerned with the local relationship system ignoring links to the external cluster environment. We suggest that it is necessary to combine insights from both approaches when analyzing fresh vegetable business, due to the local concentration and specialization of most of the European fresh vegetable production. But these local production systems operate in a market that is getting more and more global which means considering only local linkages for understanding competitiveness of local fresh vegetable producers wouldn't be enough. At the end of the day, local producers have to sell their produce to big international supermarket chains, which are situated outside of the cluster and have a globally organized business.

The research offered interesting insights into the organization of inter-firm relationships of European fresh vegetable business. To the author's knowledge, the global value chain approach so far has been mainly used to analyse relationship coordination in fresh produce business in a development research context. Global value chain research should be used more often to analyse relationship coordination and its impact for local producers in European fresh vegetable business, which has local and extra-regional linkages in a European and global market.

Global value chain analysis offers very interesting insights to understand organisation and competitiveness of European fresh vegetable business. As was argued above, due to the concentration and specialization of European fresh vegetable business it is necessary to consider also local linkages. Both approaches – global value chain and cluster approach - are very rich, with many concepts and variables that are considered. The problem for both approaches is the applicability and operationalizability of this high variety of variables to a practical empirical research. The presented research project had the aim to make first attempts

to combine both approaches and to apply them to three different case studies. Regarding money, time and personal restrictions of the research project, it was difficult to analyse all of the three case studies as much in-depth as was intended considering all the variables proposed by global value chain and cluster theory.

One of the objectives of the research project was to consider which scopes for local strategies there are in the global fresh vegetables business. As the analysis of the data isn't fully completed, we can draw only interim conclusions. Examining the presented concepts in the illustrated examples for the single case studies it seems that the most important format for relationship coordination is becoming more and more the value chain level dissolving important local firms out of their local context and integrating them in strictly governed direct value chain relations. This increasing importance of value chain relationships governed by lead firms in the chain questions the possibility for regional public and private firms and institutions to influence the development of the local production system or of the single producers for fostering competitiveness on a local level. For the Palatinate we can say that there have been positive cluster effects that seem to vanish giving more importance to direct relationships in value chains. For example it is getting more and more complicated for the very active regional research and advisory institute to influence and consult the leading local producing firms. For Emilia-Romagna region the first conclusions of data material let's assume that the local production system is in a post-cluster development phase with both value chain relationships and nationwide organisation of fresh vegetable business coming more important. Murcia shows only in very few effects that could be accounted for positive outcomes of clustering. In this region the most important organizational level seems to be the cooperative. However, in all three regions we can observe examples that clearly show how local cooperation and engagement from regional institutions together with local producers and other actors help to cope more efficiently with new requirements of the global market.

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